Submission to the Public Accounts and Public Works Committee of the Queensland Parliament

Management of Rural Fire Services in Queensland

My name is John Robertson and I am a fire fighter member of the Tamborine Mountain RFB. This submission is made solely on my own part and not on behalf of my Brigade.

I am very old and only joined the Brigade when in my 70's. It was great to find that they took geriatrics! Age notwithstanding, I attend far more fires and other incidents than any other Brigade member (e.g., more than our second, third, fourth and fifth officers put together). I am on the QFRS deployment register and go to many fires away from home. I write reports on most of the fires I attend and they are at: *tmrfb.org.au, News – Incident Reports.*

In the dim and distant past I was a fighter pilot in the RAF, then for many years a lead engineer on all phases of North Sea oil development and, long since retired, am currently a member of the Australian Volunteer Coastguard; QF1 at Southport. (AVCG is an all-volunteer organization and that is the right way for volunteers to be.) Accurate navigation has been a lifelong essential for me and much of this submission is about what QFRS calls 'Maps and Navigation'.

I am a very proud member of the Rural Fire Service and greatly enjoy serving in it. I have had several kind letters of praise from senior and not so senior QFRS officers.

Like most Australians my admiration for the work of QFRS' urban fire fighters in saving life and limb in structural fires and in recovering and rescuing the dead and injured from senseless road accidents is unbounded. I could not do their job.

Age: It is routine to read items deploring the 'ageing' of RFS volunteers. If our Brigade is any guide this is misleading. The most common age band for our new recruits is late 60's, i.e. people who have retired but who are still fit and active. These older members are more likely to attend fires than their younger

counterparts. This is not due to any lack of enthusiasm by our excellent young members but to the fact that they are working, attending TAFE, Uni or such off the Mountain and so are often not available to respond to pages.

It is not unusual for the average age of our Brigade members attending a fire to be over 70. This should not provoke a 'shock, horror' reaction but one of satisfaction that it is a solution, perhaps the solution, to sustaining volunteer recruitment. These older volunteers do a manifestly good job at the fire front.

Bush fire fighting is a more measured task than its urban equivalent - one of the rules is "don't run". Thus it is well suited to old guys who have a lot of life knowledge and experience and who are also fit and active. The stipulation that the retiree volunteers be fit and active is, of course, vital. Because they are retired there is no 'loss of pay' issue when they serve at fires.

I respectfully submit that the Committee recommends that emphasis be placed on the recruitment of fit and active retirees as rural volunteers and on any measures needed to remove impediments to their recruitment.

QFRS' Attitude to Volunteers: Ever since joining the Brigade I have experienced a contemptuous attitude by some but not all, of the QFRS hierarchy towards volunteer fire fighters. This has been shown in very many ways. An example is going to an official 'training course' but finding when one arrives that the course has been cancelled without taking the trouble to tell the volunteer trainees. This happened to me as a new recruit and it still happening to our recent recruits.

Happily this attitude does not apply locally here on the Mountain where we have the most cordial and mutually respectful relations with our Auxiliary counterparts; we regularly train together and support each other at our respective fires.

Speaking to volunteers from other regions while on deployment, it is apparent that the problem is mainly in the SEQ region. It may, in part, be caused by the obvious over-governance here. There is a "Regional Manager" in one office

with an "Area Director" in another. This is a 1:1 span of control which is a bad arrangement and contrasts with QFRS' optimum of 1:5.

Of immediate concern is the attitude of the "Regional Manager" towards an elected first officer within this region. This person is well-qualified and well-experienced for the position to which his Brigade members have elected him. QFRS has refused to approve his election on the grounds that he has 'given QFRS a lot of grief' by his criticism of them over the past six months.

That criticism is, in my opinion, thoroughly justified and in the best interests of the RFS. Be that as it may, the power granted to QFRS to refuse approval of an elected officer is properly intended to prevent an unqualified or inadequately experienced person coming into a post where lives may be put at risk. It is an abuse of power for paid staff to use it to punish a volunteer for criticism of the QFRS hierarchy. Rather should paid staff have the grace to learn from such criticism. Volunteers never offer it lightly – the cost to them in unpaid time alone ensures that. The extreme disparity of power between an individual volunteer and the forces of QFRS needs to be recognised.

I respectfully submit that the Committee recommends that the Commissioner's power (as may be delegated) to refuse an elected officer's appointment should be used for its intended purpose and never as a threat or a punishment for volunteer criticism of paid staff.

Maps and Navigation: Because of its vital importance in the most dangerous bush fires and my specific experience, this is my principal point.

Attached is a copy of a page on compass bearings, magnetic and true, in the main current Crew Leaders' booklet put out by QFRS together with my 'feedback' notes thereto. The page has multiple errors - although there is much that is good in other parts of the booklet. The same cannot be said of the "Maps and Navigation" booklet which is an integral part of the course and could, quite suitably, have been taught to a company of troops leaving for the Boer War. GPS does not rate a mention nor does Google Earth or Maps. To promulgate such a document in this day and age is as shameful as it is absurd.

The widespread adoption of GPS in the mid '90s transformed the face of navigation totally and for all time. Its simplicity and accuracy is ideal for bush fire-fighting use and it is now available on modern mobile phones in addition to sole-purpose GPS sets. It incorporates a true compass which does away with the errors which can attend the conversion of magnetic to true bearings – even by those who know what they are doing. It gives positions accurate to 0.01 km or better and much other information valuable to a fire fighter. To omit GPS from a current book on Maps and Navigation is bizarre.

When asked about using Google Earth or Maps QFRS always claims that it is 'not possible' or 'extremely expensive'. Bunk! Our Brigade uses Google Earth to map the fires that we attend. It is easy to do and the map is easy for volunteer firefighters (who are seldom map experts) to understand. It is free. Examples of fires mapped on Google Earth are available on our website as above.

We now have several Iphones and, among other things, they display a Google map of your current location at any scale you choose, an exact Lat/Long position, a true compass and an instantaneous measure of the slope of a current or potential fireground. At the press of a button you can record your exact position on Google Earth back at Incident Control and add a photo of the scene. This gives a precise, real-time plot of a fire front to those in charge. The phones have all the normal mobile functions and more besides. GPS plus Google is far better and far simpler than the various botched attempts at mapping by QFRS.

When it comes to errors in training manuals for volunteers on Maps and Navigation, QFRS is a serial offender. For example the page on Latitude and Longitude in the, then, FM1 training booklet (copy attached) was wrong in every material particular from top to bottom. If anyone took it seriously they would arrive in the wrong continent, let alone the wrong shire. When I first saw it some five years ago my eyes popped! I drew attention to the errors via the feedback form. My submission was dismissed and the same rubbish continued to be fed to volunteer trainees for years afterwards.

One may reasonably ask what is the point of taxpayers funding the salaries of those who persistently make such mistakes in the first place, fail to detect

them in the second place and refuse to correct them when they are drawn to their attention in the third place?

What is the practical importance of this at a bush fire? For 99% of fires, very little – always provided the fire fighters don't get lost on their way to the fire. For 1% it is crucial. But that 1% comprises the intense, fast moving and destructive fires which cause 99% of bush fire related deaths. That is the measure of its importance.

When magnetic variation is applied the wrong way round – as per the 2009 Crew Leader training booklet - the bearing in SEQ (as described in the attached feedback note) is wrong by about 22°. In turn this means that for every 3 km of travel, e.g. by a fire front, the path is off to one side by over 1 km. That can easily be the difference between a fire front passing by a township safely and hitting it dead centre. Likewise a 20° wind shift has tragically killed Australian rural fire fighters who thought they were quite safe.

The Lat/Long nonsense in FM1 also showed that QFRS had selected decimal degrees as its way to present Lat/Long. The international aeronautical standard, used by fixed wing aircraft and helicopters is decimal minutes. In Australia this format is mandated by AirServices Australia and it is the Search and Rescue standard. If the five figures of one format, perhaps spoken over the radio, are taken to be in the other format a position error up to 45 km may occur. At best there will be a large error – this despite GPS having measured the position accurate to 0.01 km. The attached copy email to my TMRFB colleagues following a recent training exercise describes this in more detail.

Years ago I drew attention via the feedback form to this 'accident waiting to happen' during air attack; reply: 'we have the system of the future' and no change. (It may be that a change to the standard format of decimal minutes is at long last in train due to complaints from air attack pilots.)

One could go on and on in this vein. The errors and follies of QFRS' Maps section seem unending. If we get big, bad bush fires they are a potential menace to life and limb. What saves us in SEQ is our sub-tropical climate; thank goodness! If global warming alters that, look out!

In 2008 I produced a draft training manual "Maps and Navigation for Rural Firefighters" and it is attached. It is far from perfect. The 2010 edition will be better and will include recent technical advances. However, even in its present form it is miles ahead of the QFRS stuff. When it was sent to QFRS for consideration it vanished into the maw of Maps and was never heard of again.

I respectfully submit that the Committee recommends an independent examination of the performance of QFRS Maps section be undertaken, that volunteer fire fighters be consulted and that the Commissioner be required to take account of the findings in determining the future of that section.

Thank you for the opportunity to make these submissions. It is very much appreciated.

John Robertson

RFS # 110829

Instruments for taking fire weather observations

- Temperature and humidity – *Whirling psychrometer or electronic temperature meter*
- Wind speed and gust – *Anemometer or estimated using the Beaufort wind scale (correct for height)*
- Wind direction – *Compass (convert observation to a direction from True North by subtracting 10°).*

Recording fire weather observations

Observation Site: Hang Glider Site MT 4272 **Date:** 28.2.10

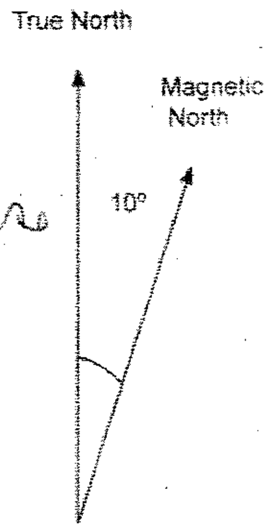
Observations of temperature and relative humidity BARO 1020 Millibars

	Dry bulb temperature (°C)	Wet bulb temperature (°C)	Relative humidity (%)
Reading #1	25.5	18.6	51%
Reading #2	27.3	18.1	40%
Reading #3	28.7	17.9	28%
Average	(Insert in column 2)	(Insert in column 3)	(Insert in column 4)

Observations of wind

Compass bearing the direction the wind is blowing from (°)	Convert to a direction from True North – add 10° from compass bearing
–	– (Insert in column 5)

See note attached plan



Observations at	Range of wind speeds (km/hr)	Average wind speed (km/hr)	Maximum wind gust (km/hr)
2 metres	7	18	25
10 metres	–	– (Insert in column 6)	– (Insert in column 7)

[illegible]

Conversation of wind speed with height above ground and Beaufort Scale

2 metre wind (km/h)	10 metre wind (km/h)	Beaufort scale number	Wind speed at 10 metres (km/hr)	Effects observed on land
0.6	1	0	under 1	Calm, smoke rises vertically
3	5	3	1-5	Smoke drift indicates wind direction, vanes do not move
5	8	2	6-11	Wind felt on face, leaves rustle, vanes begin to move
10	17	3	12-19	Leaves and small twigs in constant motion
15	25	4	20-28	Dust, leaves and loose paper raised up, small branches move
20	33	5	29-38	Small trees in leaf begin to sway
25	42	6	39-49	Larger branches of trees in motion; whistling heard in wires
30	50	7	50-61	Whole trees in motion, resistance felt in walking against wind
40	67	8	62-74	Twigs and small branches broken-off trees,progress generally impeded
50	83	9	75-88	Slight structural damage occurs, slate blown from roofs
60	100	10	89-100	Seldom experienced on land, trees broken or uprooted; considerable structural damage occurs.

The attached drawing on a page 52 (there are other page 52s) of the main Crew Leaders training booklet is the wrong way round. It contradicts the text which is correct immediately opposite the drawing but wrong again on line three at the top of the page. In Queensland a magnetic bearing is always less than a true one. In SEQ 11° (or thereby) should be added to a magnetic bearing to give a true one. In FNQ the figure is about 6°. The image below shows how magnetic declination currently varies across Australia.

The problem ceases to exist when using a GPS true compass. This is now available on the latest mobile phones and has long been available in standard GPS sets.

In this diagram: TRUE bearing = MAGNETIC bearing + number of degrees shown below.

The **magnetic declination** is given in +ve or -ve numbers. Negative indicates east and positive indicates west. If you have measured a true bearing from a map and want to convert it to magnetic you can calculate the magnetic bearing by subtracting the declination value from the true bearing. For example a true bearing of 200° at Brisbane is about 189° magnetic (subtracting 11°). Correspondingly a magnetic bearing of 200° in Brisbane is about 211° true.

These figures vary over time as the earth's magnetic field is constantly changing and declination tables have to be revised.

What is the practical importance of this? For most of the time, perhaps 99% of all bush fires, it is very little. For the 1% of large, intense and fast moving bush fires it is crucial - and that 1% of bush fires accounts for 99% of all bush fire related deaths. That is the measure of its importance.

If 11° is added instead of being subtracted to a magnetic bearing the true bearing will be in error by 22°. In turn this means that for every 3 km of travel the track will be off to one side by over 1 km. That can easily be the difference between a fire front passing by a township safely or hitting it dead centre. By the same token, a wind shift of just 20° has been enough to kill firefighters who thought they were quite safe.

It is a worry that the authors of this section got it so confused in the first place and that those responsible for checking the text failed to see the errors. Nor is this an isolated instance; for example, the Latitude and Longitude section in the then FM1 course was wrong in every material particular. If taken seriously it would land a firefighter in the wrong continent, let alone the wrong shire. When, via the feedback form, the error was drawn to the authors' attention the feedback was dismissed and the error continued for years. No doubt a similar fate will befall this feedback.

John Robertson

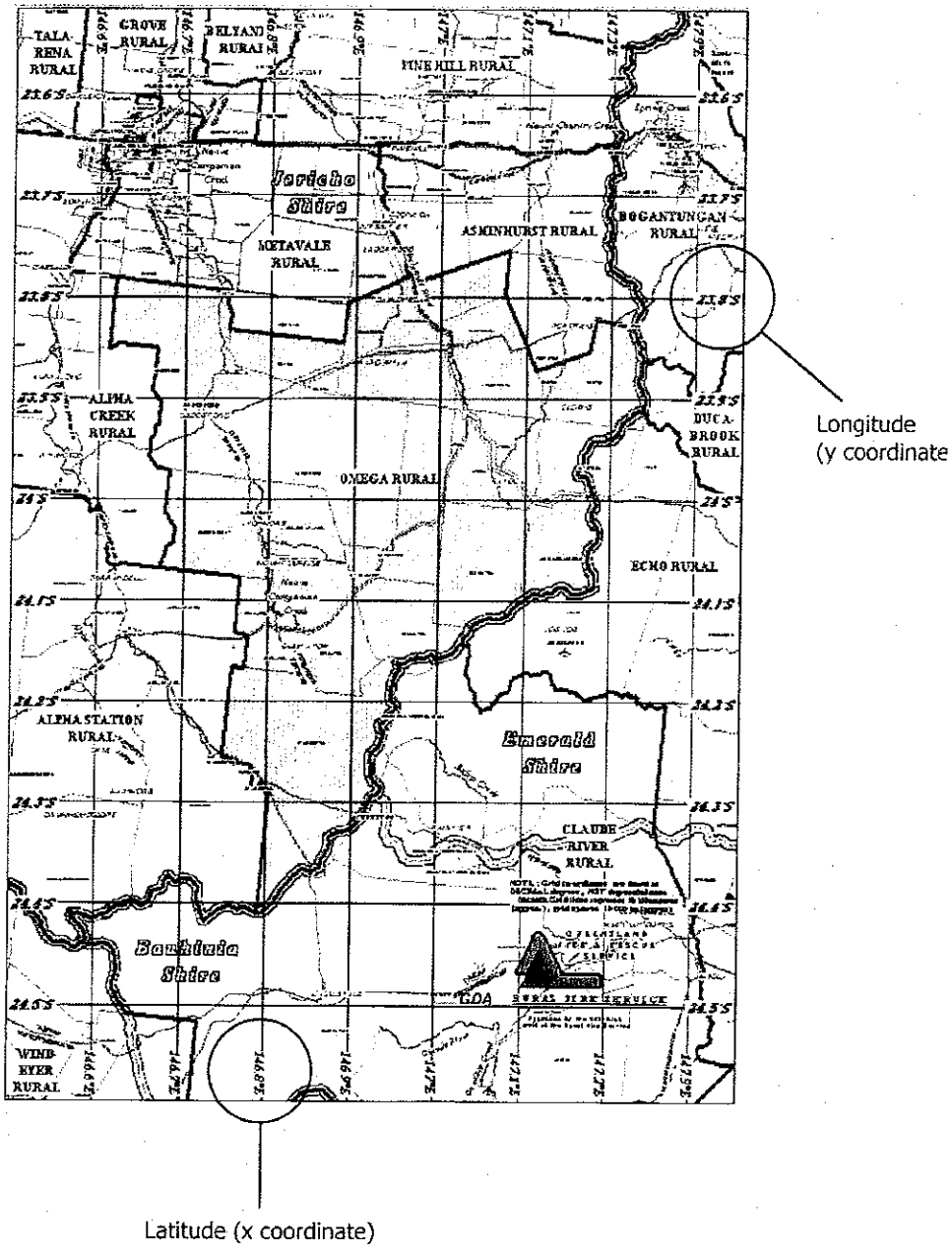
#110829

THIS IS COMPLETE NONSENSE!

Reading/Recording coordinates

The RFS use the Geographic Coordinate System GDA94 (GCS GDA94) coordinate systems for their mapping. This is measured in **latitude** and **longitude** as decimal degrees. **Latitude** (x coordinate) is read from the top or bottom border and **longitude** (y coordinate) is read from the side borders. **Latitude** and **longitude** are always read/recorded as **latitude** (x coordinate) then **longitude** (y coordinate) e.g., 146.9, -22.8 decimal degrees

Note: In the Southern Hemisphere **longitude** coordinates are always negative.



Hi Paul,

Lat/Long Interpretation Errors

Thank you for the excellent exercise last evening. These Iphones do quite marvellous things! The GPS, true compass and Google map are near perfect and theodolite function that Neil showed us for measuring slope angles is magic.

The GPS on the Iphone shows Lat and Long only in the classical format; degrees, minutes and seconds. This is the gold standard for navigation and got Captain Cook to Australia all those years ago. Nowadays maritime and aeronautical navigation use degrees, minutes and decimal minutes. This is mandated by international convention and, in Australia, by Airservices Australia, AUSSAR and similar organisations. The difference between the two can be ignored for rural fire purposes. However, several years ago QFRS chose to use the decimal degree format for Lat/Long and therein lies the problem. We drew this to QFRS' attention at the time but with no result.

To take a practical example; when Don and I reported our GPS position at the Rosser Park entrance it was:

27 degrees, 58 minutes, 21 seconds, south; 153 degrees, 11 minutes, 50 seconds, east.

The Iphone gives GPS Lat/Long only in this classical format. The reading is accurate to at least 0.01 km. However, if the numbers are spoken as, or when heard over the radio are interpreted as, the decimal degree format as per QFRS, the same numbers read as follows:

27.5821 south, 153.1150 east.

That defines a location nowhere near Rosser Park. It is the SE corner of the big quarry between the Gateway Motorway and Gardner Road. That is about 45 km NNE of Rosser Park. This is not the fault of the Iphone and still less of GPS. They are doing their job perfectly and with fabulous accuracy. It is an interpretation problem created by QFRS' use of the decimal degree format.

It does mean that we must all be vigilant when using GPS to emphasise in exactly what format a Lat/Long report is being given.

Thank you again for the splendid training sessions.

All the best,

Robbo